



Linda S. Adams
Secretary for
Environmental Protection

Air Resources Board

Mary D. Nichols, Chairman
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Arnold Schwarzenegger
Governor

July 2, 2010

Mrs. Crystal Machado, CARB Liaison
HUSS, LLC
77524 El Duna Court, Suite H
Palm Desert, California 92211

Dear Mrs. Machado:

Using the "Verification procedure, Warranty and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines (Procedure)", Air Resources Board (ARB) staff reviewed your application for verification and your request for conditional verification of the HUSS FS-MK 40S and 50S Diesel Particulate Filters (DPF). Based on an evaluation of the data provided, ARB hereby conditionally verifies the HUSS FS-MK 40S and 50S DPF as a Level 3 plus diesel emission control system for use in Transport Refrigeration Units (TRU) applications powered by off-road engines originally manufactured from model year 1998 and newer with up to 50 horsepower.

Enclosed are the conditions related to the conditional verification of the HUSS FS-MK system. ARB staff reminds you to include the diesel emission control strategy family name on all identification labels. No changes are permitted to the system as described in the conditional verification. Any changes to the system, system components, applicable models, model years, etc., must be evaluated and approved by ARB.

In order to be considered for full verification, HUSS must fulfill the following requirements within one year of the date of this letter:

- Conduct a full 1,000 hour durability demonstration of the HUSS system installed on a Thermo King and Carrier TRU. The hours must be equally divided between the two units.
- The device must be installed on TRUs that are representative of the emission control group described in Attachment 1 of the enclosure;
- Ensure that the outside temperature around the system is measured and recorded at least every 50 hours for the duration of the durability demonstration;

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website: <http://www.arb.ca.gov>.

California Environmental Protection Agency

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- Upon approval of a test plan submitted in advanced, HUSS must perform emissions tests on the service accumulated units after completion of the durability demonstration.
- Ensure that the exhaust temperature and back pressure are measured and recorded for the duration of the durability demonstration; and
- Submit a third-party statement in accordance with section 2704(e).

If HUSS fails to complete the above-stated requirements within one year of the date of this letter, ARB will not grant HUSS full verification and will terminate the conditional verification.

Additionally, as stated in the Procedure, HUSS is responsible for honoring a warranty (section 2707) and conducting in-use compliance testing (section 2709). Section 2709 requires HUSS to submit a Phase 1 test plan 90 days after 50 units have been sold or leased in California. The Phase 1 test plan must include all the information listed in sections 2709(c)(1) through (10) of the Procedure.

Thank you for participating in ARB's diesel emission control strategy verification program. If you have any questions or comments, please contact Mr. Richard Boyd, Manager, at (916) 322-8285 or by email at rboyd@arb.ca.gov or Mr. Ronald Walter, Air Resources Engineer, at (916) 327-5623 or by email at rwalter@arb.ca.gov.

Sincerely,



Richard W. Corey, Chief
Stationary Source Division

Enclosure

cc: Mr. Richard Boyd, Manager
Process Evaluation section

Mr. Ron Walter
Air Resources Engineer
Process Evaluation section

Enclosure

HUSS FS-MK 40S and 50S DPF Conditional Verification July 2, 2010

Using the "Verification procedure, Warranty and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines (Procedure)", Air Resources Board (ARB) staff reviewed your application for verification and your request for conditional verification of the HUSS FS-MK 40S and 50S Diesel Particulate Filters (DPF). Based on an evaluation of the data provided, and pursuant to the terms and conditions specified below, ARB hereby finds that HUSS FS-MK 40S and 50S DPF reduces emissions of diesel particulate matter (PM) consistent with a Level 3 plus device (greater than or equal to an 85 percent reduction and compliant with the 2009 nitrogen dioxide standard). ARB also finds that the HUSS FS-MK 40S and 50S DPF satisfactorily completed at least 33 percent (333 hours) of a durability demonstration period for the Transport Refrigeration Unit (TRU) applications. Accordingly, ARB determines that the system merits conditional verification and, subject to the terms and conditions specified below, classifies the HUSS FS-MK 40S and 50S DPF as a Level 3 Plus system for TRU applications that use diesel engines from the engine families listed in Attachment 1.

The aforementioned conditional verification is subject to the following terms and conditions:

- The HUSS FS-MK 40S and 50S DPF is conditionally verified for a period not to exceed one year from the date of this letter;
- For the HUSS FS-MK 40S and 50S DPF to be considered for full verification, HUSS must complete all remaining requirements, as specified in 10-434-0323-001, within one year of the date of this letter;
- Conditional verification is equivalent to verification for the purposes of satisfying the requirements of in-use emission control regulations;
- The verification is restricted to only those engine families and models listed in Attachment 1 used in TRU applications;
- The engine must not employ exhaust gas recirculation;
- The engine must not have a pre-existing oxidation catalyst from the original equipment manufacturer unless the following conditions are met:
 - The original equipment diesel oxidation catalyst is left in place and not removed;
 - The FS-MK filters are installed downstream of the diesel oxidation catalyst; and
 - The backpressure sensor is installed upstream of the diesel oxidation catalyst.
- The engine must not have a pre-existing diesel particulate filter from the original equipment manufacturer;

- The engine must be well maintained and not consume lubricating oil at a rate greater than that specified by the engine manufacturer;
- Lube oil, or other oil, must not be mixed with the fuel;
- The system must not be operated with fuel additives, as defined in section 2701 of Title 13, of the CCR, unless explicitly verified for use with the fuel additive(s);
- Consistent with HUSS' design specifications, ensure that all fuel delivery lines at or under the heat shield are made of stainless steel. Hoses used in the fuel line between the fuel source and the stainless steel line should meet or exceed the SAE 30R7 specification. If it is expected that other blends of bio-diesel will be used, the hoses should meet the SAE 30R9 specifications;
- The product must not be used with any other systems or engine modifications without ARB and manufacturer approval;
- The engine must be in its original configuration;
- HUSS shall supply a TRU engine inspection checklist and data sheet with each HUSS FS-MK 40S and 50S filters, to ensure compatibility. Using the checklist, the installer shall review the candidate engine actual operating conditions (e.g. lube oil consumption, injector service) prior to retrofitting the TRU with the HUSS FS-MK 40S and 50S filters, specifically, to determine if the candidate engine is suitable for installation of a HUSS FS-MK 40S and 50S filters, HUSS will also conduct training for installers. The installer shall record the results on the data sheet, and the data sheet must be retained by the installer at point of sale for a minimum of four (4) years (warranty period).
- The engine must be used in a TRU application; and
- The other terms and conditions specified below.

ARB reserves the right in the future to review this conditional verification letter and the conditions provided herein to assure that the conditionally verified add on or modified part continues to meet the standards and procedures of Title 13, sections 2222, et seq and sections 2700 through 2710, of the CCR.

The FS-MK 40S and 50S filters consist of a wall-flow diesel particulate filter, a diesel fuel burner, and an electronic control system. Schematics of the approved product and engine labels are shown in Attachment 2.

This conditional verification is valid provided that the diesel fuel used in conjunction with the device complies with Title 13, CCR, sections 2281 and 2282, and if biodiesel is used, it shall be a blend of 20 percent or less subject to the following conditions:

- The biodiesel portion of the blend complies with the American Society for Testing and Materials (ASTM) specification D6751 applicable for 15 ppm sulfur content;
- The diesel fuel portion of the blend complies with Title 13, CCR, sections 2281 and 2282; and
- The use of biodiesel applies to devices verified to reduce only diesel particulate matter.

Other alternative diesel fuels such as, but not limited to, ethanol diesel blends and water emulsified diesel fuel are excluded from this conditional verification.

This conditional verification is valid provided that installation instructions for the FS-MK 40S and 50S filter do not recommend tuning the vehicle to specifications different from those of the engine manufacturer.

Changes made to the design or operating conditions of the HUSS FS-MK 40S and 50S filter, as exempted by ARB, which adversely affect the performance of the engine's pollution control system, shall invalidate this conditional verification.

If HUSS plans to make changes to the design of the FS-MK 40S and 50S Filter, ARB must be notified in writing of any changes to any part of the FS-MK 40S and 50S Filter. Any changes to the device must be evaluated and approved by ARB. Failure to do so shall invalidate this conditional verification.

Marketing of the HUSS FS-MK 40S and 50S filter using identification other than that shown in this conditional verification or for an application or operating conditions other than that listed in this conditional verification shall be prohibited unless prior approval is obtained from ARB.

This conditional verification shall not apply to any HUSS FS-MK 40S and 50S Filters, offered for sale, sold with, or installed on a TRU prior to or concurrent with transfer to an ultimate purchaser.

As specified in the Diesel Emission Control Strategy Verification Procedure (Title 13, CCR, section 2706 (g)), the ARB assigns each Diesel Emission Control Strategy a family name. The designated family name for the verification as outlined above is:

CA/HUS/2010/PM3+/N00/OF/DPF01.

Additionally, as stated in the Diesel Emission Control Strategy Verification Procedure, HUSS is responsible for honoring the required warranty (section 2707) and conducting in-use compliance testing (section 2709).

This conditional verification does not release HUSS from complying with all other applicable regulations. Violation of any of the above conditions shall be grounds for revocation of the conditional verification.

Attachment 1: Engine family list

Attachment 2: Schematics and engine labels